Reliable Moisture Analysis – of Cosmetic Excipients

In terms of consistency and applicability, skin care products depend highly on the moisture content of cosmetic excipients, making moisture determination a routine measurement task according to USP guidelines. Pharmacopoeia-compliant moisture results and a ten times shorter analysis time for your cosmetic excipients – that’s what METTLER TOLEDO’s HR83 moisture analyzer can offer your company!

Moisture determination of raw materials in creams and lotions and the quality control of intermediates are especially important in the Cosmeceuticals market. Having to satisfy beauty as well as health needs, these products usually contain pharmaceutical ingredients and are subject to regulatory approval. As an example, a specific type of talc for cosmeceuticals has been approved by USP (United States Pharmacopoeia), requiring that Talc has to be asbestos-free. Such cosmetic excipients guarantee many fundamental cosmetics properties in cosmetic formulations.

In order to perform pharmacopoeia-compliant moisture analysis, METTLER TOLEDO offers methods for the 10 most commonly used cosmetics excipients such as talc, magnesium stearate and many others. These have been proven to match drying oven results. Furthermore, these results are obtained significantly simpler and faster saving up to 5 hours of processing time whilst the drying oven requires many time consuming process steps. The outstanding HR83 measurement performance gives precise results with up to 0.001% MC resolution. Start your moisture analysis today: easy, safe and fast!

www.mt.com/HR83
Polymorphism is the property of a substance crystallizing into two or more forms having different structures. Some of the main properties affected by polymorphism are the melting temperature, heat capacity, volume, density, crystal hardness, crystal shape, color, stability, dissolution rate and hygroscopic behavior.

**Identifying Polymorphism by DSC**

Different techniques are available to identify polymorphism. The use of differential scanning calorimetry (DSC) is one of the most interesting approaches. Polymorphs can easily be detected and transition kinetics determined, for example for the development of lipstick products.

The example in Figure 1 shows the characterization of a triglyceride in which three crystalline forms (marked 1, 2 and 3) can occur with different stabilities. The different melting/crystallization profiles (or thermograms) obtained depend on the heating rate. The three forms can be clearly seen at a heating rate of 20 K/min. In contrast, a heating rate of 3 K/min results in a very different thermogram.

The conditions used in the manufacturing process are critical as the same product can potentially form different crystalline states which can interfere with the formulation balance of the lipstick. Polymorphism also has a direct influence on the appearance of the lipstick product. It is therefore important to understand the circumstances and conditions under which polymorphism can occur. The DSC823e differential scanning calorimeter is a powerful tool for investigating polymorphic behavior in substances and helping to achieve stricter control of manufacturing process conditions.
Multi-Parameter Measurement
For the Right Cosmetics Aroma

Flavor and fragrance mixes are solutions of many substances. The exact composition is often kept secret as proprietary information of the flavor and fragrance company. However, density, refractive index, pH and color are specified as a unique 'fingerprint' of the respective mixture. Cosmetics companies therefore typically check these parameters before releasing the batch for production.

Measure More in the Same Time
METTLER TOLEDO has recently launched LiQC multi-parameter solution to address exactly these needs. At the heart of the system lies the combined density meter DR40 or DR45 together with a sample changer SC1 or SC30. This already allows the density and refractive index to be determined at a keystroke in the same sample. The LiQC software expands the system to measure pH and color as well, thus eliminating the need for stand alone measurement and the associated instrumentation-and operator efforts. Time savings are significant and results become far more reproducible thanks to the uniform sampling and cleaning procedure.

Barcodes for Reliable Results
The LiQC system offers even more benefits: A barcode reader, built-in on the SC30 sample changer, reads barcode labels as sample vials are processed. Based on this information, the system chooses the right measurement method and evaluates results against specifications. After measurement, report data is automatically exported to a freely definable ASCII text file, which facilitates export to a laboratory information and management system (LIMS). Needless to say, this improves results reliability and reduces labor time even further.

The METTLER TOLEDO LiQC multi-parameter system is ideal for raw material analysis of cosmetics companies as it significantly reduces operator time, improves reliability of results and facilitates LIMS export. Ultimately, it leads to better tastes and smells, which is highly appreciated by cosmetics consumers of all walks of life the world over.

www.mt.com/LiQC
The Right Touch of Color – With the XP Precision Balance

Nobody will escape from the natural process of graying hair, but almost everybody wants to find their “natural” color again. The Cosmetics industry is now trying to find hair dye with nuances that result as closely as possible to real hair color. To find the exact mixture of colors is a challenging task that the Excellence Plus XP precision balance is ready to assist with, offering highest accuracy and exact repeatability for best outcome.

A Balance to Support Your Formulations
The process of finding the right formulation of a hair dye can require more than 20 components. This means that specific ingredients have to be added in different concentrations to the basic recipe in order to discover the variations of the coloring. As the deviations from the different concentrations can be minimal and the added amount of nuance on a very low level, it is necessary to have a balance at hand with a readability of 10 mg. The easiest way to make the searching process fast and reliable is by mixing different formulations in several containers. Each of these containers is placed on the balance weighing pan containing only the basic recipe. After taring, the components are added to each container in the right quantities to find the right touch of color. To ensure that it will be possible to reproduce the final solution researched, all reports of the formulations have to be printed out. One should not forget that these hair dyes are complex chemical mixtures and can be easily spilled during formulation, therefore the handling of the balance has to be easy and simple. Thanks to the possibility of placing the terminal on a stand in order to prevent soiling it and with the easy to clean flat surfaces of the balance, the maintenance of the balance is a simple and straightforward task.

Speeding up Your Weighing Process
The XP6002MDR allows this procedure to be fulfilled easily: thanks to the high weighing speed, there is no waiting between adding each substance. The large square weighing pan of the M-Platform (237 x 237 mm) allows the use of several containers at the same time while 10 mg readability offers the precision required. The embedded formulation software enables registration of each component in the database and SmartSens or ErgoSens, the optical sensors for hands-free operation, allows the addition of each component. The XP6002MDR prints the results of every operation for full traceability without having to touch the balance.

With the Excellence Plus XP precision balances, the development of artificial hair color with natural nuances will be simplified in a way never achieved before.
Instrument Qualification Made Easy –
With the IPac for Titrators

Water content monitoring in semi-finished and end products is performed within the cosmetics industry on a daily basis. This is why Induchem AG applies the METTLER TOLEDO volumetric KF Titrator DL31 to the task. Moving to a new laboratory required a re-qualification of the system, for which the DL31/DL38 IPac provides a suitable solution.

Supplying Proven Chemical Components
Induchem AG is a Swiss based company with a long tradition. Incorporated under Swiss law in 1946 and starting out as a trading company, it became one of Switzerland’s major suppliers to the cosmetics industry over the years. Today, Induchem AG is producing and distributing a wide range of raw materials, active ingredients and carrier systems to the cosmetics industry in over forty countries worldwide.

Analyzing Unispheres
One product analyzed by Induchem is Unispheres. Unispheres is a visual carrier system for cosmetic products such as gels, emulsions (glitter effects), shampoos and soaps. The spherical, colorful, incredibly stable and small particles (approximately 0.5-1.5 mm) become soft, although retain their shape in water. For microbiological reasons the spheres should not contain more than 8% water.

“After moving to the new building I wanted to be sure that my DL31 will still carry out its job accurately” says Christian Leutwyler from Quality Control and adding, “it is vital for keeping up our quality standards. We provide the customer with the highest quality products according to cGMP guidelines. We soon discovered that the IPac (Initial Qualification Package for DL31/DL38) is a perfect qualification solution for Induchem. It offers not only the initial qualification for a new instrument, but can also be carried out after the Titrator has been relocated (re-qualification). Induchem bought the DL31 two years ago and at this time the IPac solution was not available for this instrument”.

Broad Usage of METTLER TOLEDO-Equipment
For analytical and production purposes, Induchem applies other METTLER TOLEDO instruments such as the FP90 with FP83HT dropping point cell and FP81HT melting point cell, RE 40D refractometer, DE40 densitometer and, of course, the whole range of weighing equipment starting from the analytical balance XS 205 to the DP1500G industrial balance.

www.mt.com/IPac
www.mt.com/titration
Improving Precision and Accuracy with RAININ’s* LTS® Light Touch™ System

Pipetting is a common task in many cosmetics laboratories. From R&D to testing and well into the production process, pipettes are truly an integral part of laboratory work - and employing quality pipetting instruments is therefore of utmost importance. As some scientists use pipettes for many hours a day, not only precision and accuracy, but also ergonomics, are key. With RAININ’s patented LTS LiteTouch System, plunger and tip ejection forces are kept at a minimum.

Making Pipetting Efficient
Pipetting in research can be exciting and frustrating at the same time. Exciting, as it is an integral part of research, where results can be seen immediately – frustrating, as frequent repetition and failures due to inaccuracies can take the fun out. Given the pressures of constantly developing innovative cosmetics, no time can be wasted. Increasing regulations and testing only adds to the stress. Tired hands and pain due to inferior pipetting equipment can lead to non-reproducible results.

That’s why RAININ developed the patented LTS LiteTouch System, which not only provides great handling with low pipetting forces, but also gives you superior precision and accuracy for reliable and repeatable experiments. A most efficient pipetting experience!

It’s the Design
The advantages of RAININ lie in the clever design of the pipettes themselves, but also of the shaft-tip system. To provide optimal handling, RAININ pipettes have an ergonomic handle with finger-hook and are made from lightweight sturdy materials. Light springs and low-force seals are used to reduce plunger forces. The Magnetic-Assist in Pipet-Lite helps to easily find the zero position.

Whereas traditional tips feature a conical design with large seal (force fit=high friction), RAININ LTS uses a cylindrical shape with a positive stop, which prevents over-insertion, together with a small seal for easy tip mounting and dramatically reduced tip ejection forces. No more “banging” the shaft into the tips, leaking seals, and fatigue due to high tip-ejection and plunger forces. The result is a smooth, reliable, and efficient pipetting experience that allows to focus on the real challenges of research and testing.

* RAININ, a METTLER TOLEDO Company is the leading pipetting solutions provider in the USA and globally present with dedicated sales and service teams.
Calibrated Weights Ensure Consistently Accurate Weighing Results

ISO9001 requires that measurement equipment like balances shall be calibrated or verified at specified intervals, or prior to use, against measurement standards traceable to international or national standards to trust display and measurement results and to guarantee the security of the processes. METTLER TOLEDO’s ISO 17025 accredited weight service supplies such highly accurate and high-quality weights to support you in this matter.

Why are Calibrated Weights for Balances so important?
In regulated environments, accurate weighing results constantly need to be guaranteed and proven. This requires regular balance testing using calibration weights. A calibrated weight is the only accepted measuring device for this task as it can be traced back to an approved reference, ensuring traceability of your testing results. This because measurement equipment is sensible to working environment conditions and can drift with time.

Traceable Balance Verification with OIML weights
If analytical test results must be traceable, so must the weighing results in order to guarantee a reliable manufacturing process or quality control. Therefore balances need to be calibrated or verified. Verification means the confirmation that the user requirement specification is fulfilled. But furthermore, legal guidelines specify that all tests must be fully traceable and therefore only certified calibration weights can be used to be fully compliant. Calibration weights and relevant certification have to conform with OIML (International Organization of Legal Metrology) which includes clear documentation of material, density and nominal weight, ensuring traceability back to the original Kilogram Prototype stored in Paris. METTLER TOLEDO balance software also supports this process by memorizing up to 10 weights, including information on nominal weight, certification number and complete calibration test documentation.

Regular Calibration and Verification
Calibration and verification of measurement equipment needs to be realized at regular intervals to guarantee the reliability of measurement at any time. The specific calibration time interval is determined by evaluating the risk of the process and the frequency of use of the measurement equipment. Furthermore it depends on the user requirement specifications as for example the process tolerance.

Regular tests of balances with calibrated weights are required to guarantee the reliability of the processes and to ensure the trust in the weighing results at any time. METTLER TOLEDO accredited weight services not only offer high quality calibration weights but also provide recalibration services. Your local METTLER TOLEDO representative will be pleased to recommend the necessary calibration weights and services for your balances.

> www.mt.com/lab-compliance
> www.mt.com/weights
Amazing Solutions
For Improved Productivity

METTLER TOLEDO delivers powerful solutions that simplify work in laboratories around the world. Combining our state-of-the-art technologies with our applicative competence, we have a strong value proposition to make: accurate results and productivity second to none.

One-Click Titration:
Excellence titrators combine high applicative power with most efficient operation and unprecedented data security. Together with the Rondo 60 sample changer the analysis is made easy through automation!
www.mt.com/one-click-titration

Combined Density-Refraactometer:
The density and refractive indices of samples can now be determined simultaneously – for the most accurate analyses at high speed.
www.mt.com/densimetro-refractometro

Analytical Instruments

Volumetric Karl Fischer Titrators:
Designed for a wide range of water content applications - suitable for many different cosmetic products, such as creams, lotions, shampoo or perfume.
www.mt.com/karl-fischer

Weighing Solutions

Tight pH limits a must in modern cosmetics:
The glass-free pH electrode InPro3300 performs with very rapid response time and shows extremely high accuracy in alkalis.
www.mt.com/inpro3300

Process Analytics

HR83 Moisture Analyzer:
With a readability of 0.1mg, password protection and traceable sample identification, the HR83 offers secure and documented results. And the automatic method development feature helps save time – for faster test results.
www.mt.com/moisture

XS Analytical Balance:
High-speed weighing and a clean solution thanks to SmartGrid and ErgoClips for increased productivity and undisturbed routine operations
www.mt.com/xs-analytical

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